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FIVE NEW SPECIES OF ANURAPHIS AND APHIS*

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The aphid species described in this paper have the cauda either distinctly conical or with a very definite constriction and are being referred to the two genera, *Anuraphis* and *Aphis*. If the view now held by some writers, that the species of these two groups really represent one genus, becomes established, then the five species here considered will of course all fall under the genus *Aphis*.

ANURAPHIS ARUNDINARIAE, new species

Alate viviparous female. (Plate III, figs. 1-6.) General color of body and appendages brown. Length of body 1.64 mm. Head very dark brown. Width much greater than the length. Posterior margin somewhat curved, front between the antennae strongly arched. Dorsal surface with a few very short fine spines each arising from a minute circular clear area. Width of head across the eyes .408 mm. Eyes dark reddish-brown; large, prominent, with elongated ocular tubercles. Ocelli large, bordered with black. Antennae dark brown except a small basal portion of the third segment which is somewhat lighter than the rest; six-segmented, reaching about to the middle of the abdomen. The unguis of the sixth segment slightly longer than the third segment and the fourth longer than the fifth. The first two segments smooth, the remaining segments definitely imbricated, all segments with a few very short reclining spines. Length of antennal segments as follows: I, .068 mm., II, .048 mm., III, .286 mm., IV, .204 mm., V, .163 mm., VI, base, .082 mm., unguis, .326 mm. Third segment with 13 oval to circular sensoria scattered over most of one side of the segment; fourth segment with 5 sensoria arranged in a single rather even row; fifth segment with one rather small sensorium in addition to the larger terminal one; sixth segment with the usual group of one large and a few small sensoria at the base of the unguis. Rostrum light brown with the tip dark brown, thick and short, reaching only slightly beyond the prothorax.

Thorax brown; the dorsal lobes of the thorax dark brown, concolorous with the head; wing insertions brown. The prothorax and the anterior margin of the mesothorax with cone-shaped lateral tubercles. Wings

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Explanation of Plate III

Anuraphis arundinariae n. sp.

Figs. 1-5—Alate viviparous female.

Figs. 6-8—Apterous viviparous female.

Anuraphis iteae n. sp.

Figs. 9-14—Alate viviparous female.

Figs. 15-18—Apterous viviparous female.

Anuraphis minima n. sp.

Figs. 19-23—Apterous viviparous female.

Figs. 24-25—Male. Figs. 26-27—Oviparous female.

Aphis astericola n. sp.

Figs. 28-32—Alate viviparous female.

Figs. 33-35—Apterous viviparous female.

Aphis floridanae n. sp.

Figs. 36-40—Alate viviparous female.

Figs. 41-44—Apterous viviparous female.

hyaline, stigma dark brown, veins black. Fore wing with the media twice-branched, the second fork much nearer to the margin of the wing than to the first fork. Hind wing with two oblique veins. Legs dark brown with the bases of the femora yellowish. The forelegs slightly lighter than the other two pairs.

Abdomen yellowish-brown with dark brown markings as follows: an irregular, median, longitudinal band on the dorsal surface, two rows of more or less connected black spots along each lateral margin, and two wide transverse bands between the cornicles and the cauda. Small cone-shaped lateral tubercles on several of the abdominal segments. Cornicles dark brown; elongated, wider at the base and apex and slightly constricted in the middle. Deeply imbricated, giving the surface a wrinkled appearance. Length, .204 mm. Cauda and anal plate very dark brown. Cauda cone-shaped without a constriction, the surface covered with short, thick, spine-like processes, four curved hyaline hairs on each side near the tip. Anal plate hemispherical, the surface covered with spine-like processes similar to those of the cauda, armed with numerous rather long slightly curved hyaline hairs arising from conical bases. Length of cauda .109 mm.

Apterous viviparous female. (Plate III, figs. 6-8.) General color of body and appendages brown. Length of body 1.56 mm. Head dark brown, very short antennal tubercles, the anterior margin between the antennae strongly arched. The dorsal surface with a few short hyaline hairs arising from conical bases. Eyes very dark reddish-brown. Width of head across the eyes .408 mm. Antenna dark brown, except the basal half of the third segment which is light brown. Segments III to VI very definitely imbricated. Length of segments as follows: I, .082 mm., II, .054 mm., III, .258 mm., IV, .163 mm., V, .163 mm., VI, base, .082 mm., unguis, .326 mm. Segments without sensoria except the primary ones of the fifth and sixth segments. Rostrum light brown with dark brown tip, thick and rather short, reaching only to the second coxae.

Thorax and abdomen yellowish-brown, darker brown along the lateral margins. Prothorax and some of the abdominal segments with elongated, round tipped, lateral tubercles. Surface of the abdomen reticulated, especially along the sides. Legs medium brown, the hind pair somewhat darker than the preceding pairs. Cornicles dark brown; widest at the base and very slightly constricted in the middle. Cornicles definitely imbricated throughout their length and having a wrinkled appearance. Length .272 mm. Cauda and anal plate dark brown. Cauda triangular, the surface covered with blunt spine-like processes. Four curved, hyaline hairs on each side near the apex. Anal plate hemispherical with the surface covered with spine-like processes similar to those of the cauda, and armed with several slightly curved hyaline hairs, each arising from a conical base. Length of cauda, .122 mm.

Type locality: Gainesville, Florida.

Types: Holotype alate viviparous female from *Arundinaria tecta*, Apr. 16, 1930, and morphotype, apterous viviparous female, same data as the holotype, deposited in the U. S. National Museum Collection, Cat. No. 44292. Paratypes from the same

lot in the collection of the Entomology Department, Florida Agricultural Experiment Station, and in that of the author. Type selected from a series of 20 alate viviparous females. Type material collected by the author.

Notes: This brown aphid occurred in thick colonies on the ventral side of the younger leaves of cane-brake. The most distinctive feature which serves to separate the species from other species of the genus is the form of the cornicles. The fact that these structures are narrowed in the middle and wider at the base and apex may be sufficient reason for placing this form in another genus but for the present it seems best to retain it in the genus *Anuraphis*. Measurement of ten alate females indicate the following range in size: length, 1.40-1.64 mm.; width of head, .367-.408 mm.; antennal segments, III, .245-.286 mm., IV, .163-.204 mm., V, .136-.183 mm., VI, base, .074-.082 mm., unguis, .286-.326 mm.; length of cornicles, .190-.218 mm.; third segment of the antenna with 6-13 sensoria, fourth segment with 2-5 sensoria and the fifth segment with 0-2 sensoria.

Records: *Arundinaria tecta*, Cane-brake, Gainesville, Apr. 16, 1930 (F 588-30).

ANURAPHIS ITEAE, new species

Alate viviparous female. (Plate III, figs. 9-14.) General color of body and appendages brown. Length of body, 1.36 mm. Head dark brown. Width greater than the length, posterior margin nearly straight, frontal portion between the antennae produced. Anterior margin with a few short spines. Width through the compound eyes .340 mm. Eyes dark reddish-brown; large, with large prominent ocular tubercles. Ocelli bordered with black. Antennae six-segmented, about three-fourths as long as body. The sixth segment far exceeding the others in length, nearly or quite as long as the combined lengths of the three preceding segments. The first two antennal segments dark brown though somewhat lighter than the head, the remaining segments light brown or dusky. First two segments smooth, remaining segments imbricated. The third segment considerably thicker than the succeeding segments. Length of the antennal segments as follows: I, .068 mm., II, .048 mm., III, .177 mm., IV, .122 mm., V, .117 mm., VI, base, .075 mm., unguis, .381 mm. Third segment with 7 rather large circular sensoria, fourth segment without sensoria, the usual apical sensorium on the fifth segment and the group at the base of the unguis of the sixth segment. Antennal segments with a few minute spines. Rostrum light brown with dark brown tip, thick and short, reaching but little beyond the posterior margin of the prothorax.

Thorax brown, the dorsal lobes concolorous with the head. Prothorax with conical lateral tubercles. Wings hyaline, stigma and veins brown. Forewing with media twice-branched. Distance between first and second

forks about two and one-half times as great as distance from second fork to margin of wing. Hind wing with two oblique veins. Femora of the legs dark brown with bases yellowish, tibiae and tarsi yellowish or dusky. End of tibiae funnel-like. Tibiae of all pairs of legs with a peculiar knob-like structure at the apex.

Abdomen brown, apparently with darker markings. Rather prominent lateral tubercles on some of the segments, the one between the cornicles and cauda larger than the preceding ones. Cornicles dark brown; short, somewhat curved, of almost equal width from base to apex; imbricated. Length, .088 mm. Cauda and anal plate very dark brown or black. Cauda abruptly conical, without a constriction, about as long as the cornicles. Surface covered with numerous short, thick, spine-like processes. Four or five much curved hairs on each side near the apex. Anal plate broadly rounded, the surface covered with spine-like processes similar to those of the cauda. Several long slightly curved, hyaline hairs arising from conical bases.

Apterous viviparous female. (Plate III, figs. 15-18.) General color of the body and appendages brown. Length of body, 1.20 mm. Body broadly oval, but little longer than wide. Head dark brown. Much wider than long, the anterior margin between the antennae somewhat produced. Eyes dark reddish-brown; rather small with prominent ocular tubercles. First two antennal segments concolorous with the head, the remaining segments lighter brown. The two basal segments smooth, the remaining ones faintly imbricated, without sensoria except the usual primary ones at the apex of the fifth segment and at the base of the unguis of the sixth. Length of the antennal segments as follows: I, .075 mm., II, .054 mm., III, .231 mm., IV, .136 mm., V, .122 mm., VI, base, .082 mm., unguis, .340 mm. Rostrum dark brown, thick and short, reaching only to first coxae.

Thorax and abdomen reddish-brown with darker brown markings. The skin of the abdomen very definitely reticulated. Femora of all pairs of legs reddish-brown, tibiae yellowish, tarsi brown. The apex of the tibiae with the same knob-like structure found in the alate female. Cornicles dark brown; of uniform width from base to apex; surface covered with fine imbrications. Length, .128 mm. Cauda broad and blunt without constrictions, the surface covered with numerous short, thick, spine-like processes, five long curved hyaline hairs on each side. Anal plate broad, slightly rounded, the surface covered with the shorter spine-like structures similar to those of the cauda, armed with numerous hairs shorter and finer than those of the cauda.

Type locality: Keystone Heights, Florida.

Types: Holotype alate viviparous female collected Apr. 24, 1927 (F 217-27), deposited in the U. S. National Museum Collection, Cat. No. 44291. Paratypes from the same lot as the holotype in the collections of the Entomology Department of the Florida Experiment Station, and in that of the author. Type selected from a series of ten alate viviparous females. Type material collected by the author.

Notes: This brown aphid in general appearance resembles *Anuraphis caliginosa* H. & F. from dogwood. A closer examination of the two species will, however, reveal the following differences: the sixth antennal segment in comparison with the other segments is much longer in *iteae*. The lateral tubercles of the thorax and abdomen are very much larger in *caliginosa* and the cauda is armed with numerous hairs as contrasted with the few hairs on the cauda of *iteae*. A study of the alate females gave the following measurements: length, 1.08-1.52 mm.; width of head through the eyes, .313-.354 mm.; antennal segments, III, .150-.231 mm., IV, .095-.136 mm., V, .109-.136 mm., VI, base, .075-.095 mm., unguis, .313-.394 mm.; length of cornicle, .088-.109 mm.; third segment of the antenna with 5-9 sensoria, the usual number being 6 or 7.

Records: *Itea virginica*, Keystone Heights, Apr. 24, 1927 (F 217-27).

ANURAPHIS MINIMA, new species

Apterous viviparous female. (Plate III, figs. 19-23.) Prevailing color brown. Body broadly pear-shaped. Length 1.04 mm. Head pale yellowish-brown to dark reddish-brown. Width across the compound eyes .313 mm. Front of head rounded, posterior margin nearly straight. Eyes very dark brown, with large ocular tubercles. Antennae six-segmented, reaching about to the middle of the abdomen. The third and fourth segments only partially separated, in most specimens completely fused. The first two segments brown, the third, fourth, and base of the fifth pale, the apical portion of the fifth and all of the sixth brown. The first two segments smooth, the remaining ones imbricated. All segments with a few short spines. The usual sensoria near the apex of the fifth segment and the base of the unguis of the sixth. Length of antennal segments as follows: I, .06 mm., II, .045 mm., III, .114 mm., IV, .099 mm., V, .105 mm., VI, base, .072 mm., unguis, .134 mm. Rostrum rather thick, reaching to the third coxae.

Thorax and abdomen yellowish-brown to dark reddish-brown. Just in front of and between the cornicles a few dull greenish markings. The prothorax with very large elongated cone-shaped lateral tubercles. Similar lateral tubercles on the first abdominal segment and another pair between the cornicles and the cauda, those of the latter pair somewhat smaller than in the two preceding ones. Legs brown, the tarsi and the apices of the femora and tibiae somewhat darker than the remaining portions. The femora and tibiae with numerous rather long, curved, hyaline hairs. Cornicles very dark brown, cylindrical, or slightly tapering from base to apex. Definitely imbricated throughout their length. Length, .109 mm. Cauda dark brown, broadly conical, the tip rounded. Four or five rather long curved hairs on each side. Anal plate dark brown, large, rounded and armed with numerous slightly curved hairs. The surface of the cauda and anal plate thickly studded with short, thick, spinelike processes.

Apterous male. (Plate III, figs. 24, 25.) Prevailing color brown. Length from vertex to tip of cauda .914-.971 mm. Head dark brown. Width much greater than the length, frontal margin rounded. Width through eyes .285-.300 mm. Eyes reddish-brown, with large ocular tubercles. Antennae brown, first two segments and base of the third lighter than the head, remainder very dark brown, almost black. First two segments smooth, remaining ones imbricated. All segments with a few very short and fine hyaline hairs. Third and fourth segments each with 1-3 sensoria, fifth segment with 1 or 2 sensoria in addition to the terminal primary one. Length of antennal segments as follows: III, .143-.150 mm., IV, .085-.092 mm., V, .085-.092 mm., VI, base, .071-.078 mm., unguis, .100-.114 mm. Rostrum brown with apex black, reaching to coxae of last pair of legs.

Prothorax brown, slightly lighter than the head; remainder of thorax and the abdomen reddish- or yellowish-brown, much lighter than the head. Prothorax with large blunt lateral tubercles similar to those of the viviparous female. Legs brown, the bases of the femora and tibiae yellowish-brown, the apices and the tarsi dark brown. First abdominal segment with lateral tubercles similar in shape but somewhat smaller than those of the prothorax; more pointed tubercles on the segment posterior to the cornicles and sometimes on the other segments also. Cornicles dark brown, nearly cylindrical without a flare at the apex, definitely imbricated. Length .078-.085 mm. Cauda concolorous with the abdomen, short and abruptly conical with the tip rounded. Four or five rather long, slightly curved hyaline hairs on each side. Anal plate dark brown, large, broadly rounded, with numerous hairs similar to those of the cauda. The surface of the cauda and anal plate with numerous short, thick, chitinous spine-like processes.

Oviparous female. (Plate III, figs. 26, 27.) Prevailing color brown. Length of body from vertex to apex of anal plate 1.28-1.40 mm. Head reddish-brown, somewhat narrowed in front with the anterior margin rounded. Width through the eyes .300-.314 mm. Eyes reddish-brown with rather large ocular tubercles. Antennae five- or six-segmented, somewhat less than half as long as the body. First two segments yellowish-brown, third, fourth, fifth, and base of sixth yellow, the apical portion of the sixth dark brown. First two segments smooth, the remaining ones imbricated. All segments with a few short, hyaline, spine-like hairs. The third and fourth segments without sensoria, the usual primary ones at apex of fifth and at base of the unguis. Length of antennal segments as follows: III, .143-.171 mm.; IV, .071-.085 mm., V, .100-.107 mm., VI, base, .071-.085 mm., unguis, .114-.128 mm.

Thorax and abdomen brown, the prothorax more yellowish than the head, the remainder of the thorax and the abdomen concolorous with the head, except the segment behind the cornicles which is sometimes more yellowish. The yellowish prothorax gives the insect the appearance of having a broad light collar just behind the head. Prothorax with a large blunt lateral tubercle. First abdominal segment and the segment just behind the cornicles with large pointed tubercles, smaller tubercles on the remaining abdominal segments. Legs mostly yellowish, the apex of the

hind femora, the apices of all the tibiae and all the tarsi dark brown. The tibiae of the hind legs not swollen and without sensoria. The legs with short hyaline spines, these being most numerous on the tibiae. Cornicles dark brown, sub-cylindrical, widest at the middle and slightly narrowed both at base and apex. Apex not flared. Finely but definitely reticulated throughout their length. Length .114-.128 mm. Cauda yellowish to dark brown, abruptly conical or nearly hemispherical, with five or six slightly curved hyaline hairs on each side. Anal plate dark brown with numerous hyaline hairs. Surface of the cauda and anal plate thickly covered with short thick spine-like processes.

Type locality: Gainesville, Florida.

Types: Holotype apterous viviparous female taken from *Prunus americana* June 6, 1930 (F 656-30). Allotype male, Gainesville, from *Prunus americana*, Dec. 4, 1931 (F 831-31), on slide with an oviparous female. Morphotype oviparous female, same data as allotype male, on slide with a male and four oviparous females. All of above types deposited in the U. S. National Museum Collection, Cat. No. 44293. Paratypes in the collections of the Entomology Department, Florida Agricultural Experiment Station, and in that of the author. Types selected from a large number of apterous viviparous females and oviparous females and from ten males. Type material collected by the author.

Notes: This small brown aphid is found on the leaves and tender twigs of the native plums. The insect feeds almost exclusively along the midrib and larger veins of the leaves and frequently cause the leaves to become tightly curled. The species has been under observation for more than three years and an alate individual has never been observed. It seems altogether probable that only apterous forms occur. In the latter part of November and during December 1931 a few males were found among large numbers of oviparous females upon a small plum tree. The females were depositing eggs in abundance upon the smaller twigs. Apparently none of these hatched. There is a strong tendency to a variation in the number of antennal segments in this species. About one-third of the viviparous and oviparous females have six segments in the antennae, a few have the third and fourth joints only partially divided and the remainder have only five segments. In the case of the males a larger proportion show the six-segmented condition. In some individuals one antenna is six-segmented, the other having but five segments. In those individuals having only five joints, or having the third and fourth only partially divided, the length of the third is about equal to the combined lengths of the third

and fourth in the six-segmented antennae. The bodies of the living insects are covered with a light bloom which gives them a slightly bluish appearance.

Records: *Prunus angustifolia*, Gainesville, Sept. 19, 1928 (F 402-28), (apterous vivip. females); *Prunus umbellata*, Monticello, June 4, 1930 (F 650-30), (J. R. Watson), (apterous vivip. females); *Prunus americana*, Gainesville, June 6, 1930 (F 656-30), July 30, 1930 (F 679B-30), (apterous viviparous females), Nov. 27, 1931 (F 814-31), (oviparous females and males), Dec. 4, 1931 (F 831-31), (oviparous females and males).

APHIS ASTERICOLA, new species

Alate viviparous female. (Plate III, figs. 28-32.) Prevailing color, various shades of brown. Length, 1.32 mm. Head dark olive-brown, wider than long, the front somewhat produced. Width of head through the eyes, .367 mm. Eyes dark reddish-brown; large, with prominent ocular tubercles. Ocelli bordered with very dark brown. Antennae six-segmented, about as long as the body. First two segments concolorous with the head, remaining segments slightly lighter brown. Unguis of the sixth segment a little longer than the third segment, and the fourth slightly longer than the fifth. Segments III to VI definitely imbricated and with a few very fine, short spines. Length of the antennal segments as follows: I, .082 mm., II, .054 mm., III, .340 mm., IV, .231 mm., V, .204 mm., VI, base, .109 mm., unguis, .367 mm. Right antenna with 7 sensoria on the third segment; left antenna with 9 sensoria on the third segment. The sensoria arranged in a single rather irregular row along one side of the segment. The sensoria more or less circular in outline and varying greatly in size, the largest having a diameter twice as great as that of the smallest. The fourth segment of both antennae without sensoria, the fifth with the usual primary terminal one, and the sixth with the usual group at the base of the unguis. Rostrum brown with dark brown apex; reaching to middle coxae.

Thorax reddish-brown, the lobes olive-brown, concolorous with the head; wing insertions yellowish. Prothorax slightly wider than the head with pointed cone-shaped lateral tubercles. Wings hyaline, stigma and veins grayish-brown. Fore wing with media twice-branched, the second fork nearer to the margin of the wing than to the first fork. Hind wing with two oblique veins though the cubitus is only faintly imbricated. Hind wing rather small and narrow. First two pairs of legs with the femora yellowish or very light brown, the tibiae with dark brown extremities and yellowish middle portions, and the tarsi dark brown. The hind legs considerably darker than the other two pairs, entirely dark brown except the basal portions of the femora which are yellowish.

Abdomen a uniform reddish-brown without markings. Cornicles dark brown; long slightly tapering with a slight flare at the apex, definitely imbricated throughout their length .286 mm. Cauda dark brown; long, slender and somewhat constricted near the middle. Two curved hairs on

each side near the apex. Length of cauda .150 mm. Anal plate dark brown, rounded, with several slightly curved hairs.

Apterous viviparous female. (Plate III, figs. 33-35.) General color dark brown. Length 1.72 mm. Head yellowish-brown to reddish-brown. Eyes dark brown, rather small and closely appressed to the head. Width of head through the eyes .326 mm. Antennae six-segmented, somewhat shorter than the body. First two segments olive-brown, darker than the head, third, fourth, and fifth, with middle portions yellowish-brown and the extremities dark brown; sixth segment entirely dark brown. Third and fourth segments without sensoria, the fifth with the usual terminal one and the sixth with the usual group at the base of the unguis. Third to sixth segments imbricated. Length of the antennal segments as follows: I, .082 mm., II, .054 mm., III, .340 mm., IV, .204 mm., V, .177 mm., VI, base, .095 mm., unguis, .326 mm.

Thorax and abdomen very dark reddish-brown with yellowish globules showing through the body wall. Prothorax with small blunt lateral tubercles. First two pairs of legs with yellowish femora, tibiae with yellowish middle portions, and dark brown apices, and the tarsi dark brown. Hind legs entirely dark brown except the bases of the femora which are yellowish. Cornicles dark brown, widest at the base, tapering toward the apex, imbricated throughout their length. Length, .354 mm. Cauda dark brown, elongated, constricted below the middle.

Three sharply curved hairs on each side above the middle. Length .150 mm. Anal plate dark brown, semicircular, with three or four slightly curved hairs on each side.

Type locality: LaCrosse, Florida.

Types: Holotype alate viviparous female taken from *Aster* sp. Aug. 18, 1930 (F 682-30), deposited in the U. S. National Museum Collection, Cat. No. 44294. Paratypes in the collections of the Entomology Department, Florida Agricultural Experiment Station and in that of the author. Type selected from a series of eight alate females. Type material collected by H. E. Bratley.

Notes: This dark brown aphid from wild aster, in general appearance closely resembles the brown *Aphis floridanae* from *Lactuca*. It can, however, be separated from that species by the following characteristics. The fourth segment of the antenna is without sensoria, while the third segment of *floridanae* has from two to five sensoria; the cornicles are relatively longer in *astericola* and the hind tibiae are entirely brown as contrasted with the yellowish hind tibiae of *floridanae*.

Measurements of eight alate females are as follows: length, 1.16-1.36 mm.; width of head across the eyes, .340-.367 mm.; length of antennal segments, III, .299-.340 mm., IV, .204-.231 mm., V, .177-.204 mm., VI, base, .095-.109 mm., unguis, .340-

.367 mm.; length of cornicles .231-.286 mm.; third antennal segment with 6-10 sensoria.

Records: *Aster* sp., LaCrosse, Aug. 18, 1930 (F 682-30) (Bratley).

APHIS FLORIDANAE, new species

Alate viviparous female. (Plate III, figs. 36-40.) Prevailing color brown. Length, 1.12 mm. Head dark brown, much wider than long, without antennal tubercles, front rounded. Width through the compound eyes, .367 mm. Eyes very dark brown; large, with prominent ocular tubercles. Ocelli bordered with very dark brown. Rostrum light brown with extreme tip dark brown; reaching nearly to the middle coxae. Antennae shorter than the body, six-segmented. All the segments brown, somewhat lighter than the head. Segment III of the right antenna with eight circular sensoria, the fourth segment with 3 sensoria. Left antenna with 11 sensoria on the third segment, and 2 sensoria on the fourth. Fifth segment of each antenna with the usual primary sensorium, secondary sensoria absent. The sixth segment with the usual group of sensoria at the base of the unguis. The sensoria of the third segment are scattered over most of one side of the segment and extend from base to apex. The sensoria of the fourth segment are arranged in a straight row. Length of the antennal segments as follows: I, .054 mm.; II, .054 mm.; III, .258 mm.; IV, .136 mm.; V, .122 mm.; VI, base, .068 mm.; unguis, .231 mm. Segments III to VI are distinctly imbricated.

Thorax brown, the lobes same shade as the head, the remaining portions somewhat lighter. Prothorax slightly wider than the head with small lateral tubercles. Wing insertions yellowish. Wings hyaline, the veins brown, the stigma yellowish-brown. Fore wing with radial sector present, media twice-branched, the second fork much nearer to the margin of the wing than the first fork. Hind wing with two oblique veins. Legs mostly brown. The femora dark brown with the bases yellowish; those of the fore legs somewhat lighter than those of the other two pairs. Tibiae yellowish, with apices dark brown; tarsi dark brown.

Abdomen mostly dark brown with lighter brown areas where the embryos are visible through the body wall. Cornicles dark brown; imbricated, somewhat curved, not much variation in width from base to apex. Length, .163 mm. Cauda brown; elongated, tapering, somewhat constricted near the middle, with a few hyaline, curved hairs on each side. Length of cauda, .136 mm. Anal plate dark brown; broadly rounded with numerous curved hyaline hairs.

Apterous viviparous female. (Plate III, figs. 41-44.) General color brown. Head dark yellowish-brown; somewhat wider than long, front sharply rounded so that the outline of the head is triangular when viewed from above. Eyes dark reddish-brown; with definite ocular tubercles. First two antennal segments concolorous with the head; third, fourth, and base of the fifth pale yellowish; apex of the fifth and all of the sixth light brown. Segments III to VI imbricated. The usual sensoria near the apex of the fifth and at the base of the unguis of the sixth. Rostrum light brown, reaching slightly beyond the first coxae.

Prothorax yellowish-brown, remainder of the thorax and the abdomen reddish-brown. Femora dark brown, the tibiae mostly yellowish, with the apices dark brown; tarsi dark brown. Cornicles dark brown; somewhat curved, imbricated; widest at the base and tapering slightly. Cauda yellowish-brown; elongated, with a constriction above the middle; five or six hyaline, curved hairs on each side. Anal plate slightly darker than the cauda; rounded, with several hyaline hairs. Measurements of the apterous female as follows: length, 1.32 mm.; width of head, .340 mm.; antennal segments, I, .068 mm., II, .048 mm., III, .177 mm.; IV, .102 mm., V, .095 mm., VI, base, .074 mm., unguis, .204 mm., cornicles, .190 mm., cauda, .150 mm.

Type locality: Tampa, Florida.

Types: Holotype alate viviparous female collected July 21, 1930 from *Lactuca floridana*, deposited in the U. S. National Museum Collection, Cat. No. 44295. Paratypes from the same collection as the holotype in the collections of the Entomology Department of the Florida Agr. Exp. Sta., and in that of the author. Type selected from a series of eight specimens. Type material collected by F. S. Blanton.

Notes: This brown aphid though smaller than *Aphis rumicis* resembles that species in general appearance. It differs from *Aphis rumicis* in the following respects: the third antennal segment has a smaller number of sensoria than in *rumicis*. The third segment is longer in proportion to the fourth and fifth, and the base of the sixth is shorter in relation to the unguis than is the case in *rumicis*. The cornicle is distinctly longer than the fourth antennal segment while in *rumicis* the cornicle is usually shorter than the fourth segment. A study of eight alate females gave the following measurements: antennal segments, III, .218-.258 mm., IV, .129-.150 mm., V, .109-.122 mm., VI, base, .068-.073 mm., unguis, .218-.245 mm.; cornicles, .150-.163 mm.; the third segment with 8-12 sensoria, the fourth with 2-5 sensoria.

Records: *Lactuca floridana*, Tampa, July 21, 1930 (F 672-30) (Blanton).

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SOME THYSANOPTERA OF THE GREAT SMOKY MOUNTAINS

The Thysanoptera here listed were collected near Gatlinburg, Tenn., on the western edge of the Great Smoky Mountain National Park, during the latter half of August and the first few days of September, 1932.

No claim is made that the list is at all complete for the region and the time of year. Nevertheless, it is not without interest as it contains several new species and greatly extends the range of several other species. The new species will be described in another paper.

Frankliniella tritici (Fitch). As was to be expected this common flower thrips was the most abundant of all species in blossoms. It occurred in nearly all species of blossoms examined.

Frankliniella stylosa Hood. This species was also found common in nearly all species of blossoms examined and at all altitudes from 1000 to 5000 feet. It is a widespread species but does not seem to have before been reported as abundant in any locality.

Frankliniella williamsi Hood. Taken in blossoms of Ragweed, apparently not as common as in South Carolina, judging from a collection of Thysanoptera from that state gathered by Mr. J. G. Watts and examined by the writer.

Ctenothrips frosti Moulton. This species was described by Moulton (Bull. Brooklyn Ent. Soc., Vol. XXIV, No. 4, p. 233-4.) from a single female taken in Massachusetts. Three macrop-
terous females and four males were taken by sweeping vege-
tation (mostly *Solidago* spp. and asters) at an altitude of ap-

proximately 4000 feet. Descriptions of the macropterous females and males follow:

Macropterous female.

Color: Pterothorax lighter than other parts of body, otherwise colored as described for brachypterous female.

Wings slender, reaching beyond the tip of abdomen. Basal fifth a light yellowish brown, second fifth dark brown, remaining three fifths lighter brown with a lighter longitudinal streak. Anterior vein with 18 to 21 conspicuous, brown, long, pointed bristles. Posterior vein with 14 to 17, evenly spaced except the apical one. Otherwise as described for the brachypterous holotype.

Male.

Colored as in the female, a long-oval, light spot on each abdominal segment from 3rd to 8th.

Somewhat smaller than the females.

Measurements (average of 4 males). Total body length 1.5 mm.; head, length .16 mm.; width across the eyes, .16 mm.; prothorax, length .15 mm., width .22 mm.; pterothorax, width .33 mm.; abdomen, width .30 mm. Antennal segments: length (width) I, 35 (36); II, 44 (31); III, 91 (23); IV, 74 (25); V, 58 (20); VI, 75 (24); VII, 14 (10); VIII, 23 (7) microns; total length .41 mm.

Thrips impar Hood. In blossoms of *Impatiens* and *Saponaria*.
Sericothrips variabilis Beach. On ragweed.

Plesiothrips perplexus Beach. Under leaf sheaths of barnyard grass (*Panicum Crus-galli* L.).

Haplothrips graminis Hood. On grass. In blossoms of Indian Pipe (*Monotropa uniflora*).

The following species were collected from decaying leaves taken from the ground and dried out in a simplified Berlese funnel. This sort of material was not nearly as rich in Thysanoptera as similar material in Florida. A dozen collections of such material taken from the western slope of the Great Smokies, even the driest situations, yielded not a single individual. The six species taken were in material from a drier (east slope) ridge to the west of Gatlinburg. Evidently the western slope of the Smokies is too wet and cold for the development of this chiefly southern fauna.

Trichothrips americana Hood. *Trichothrips pergandi* Hood. *Trachythrips watsoni* Hood. Two apparently undescribed species of *Plectrothrips* and one of *Zygothrips*. The presence of the *Trachythrips*, hitherto recorded only from Florida, was surprising. The writer has also taken it in Clayton, Ga., and Parris Island, S. C.

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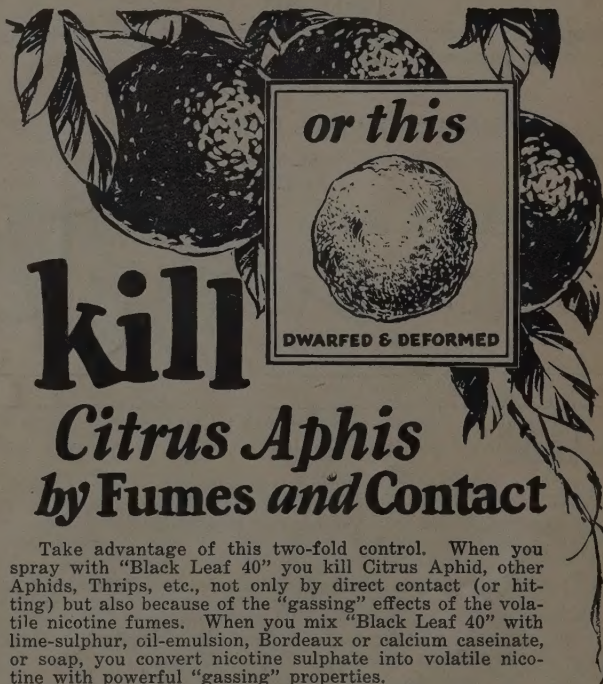
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